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SCD DNA Sequence (SEQ ID NO:1)

gtgggtgtcgg	tgtegggcage	atccccggcg	ccctgctgcy	gtcgccggag	ccctcggcct	60
ctgtttctcct	ccccctcccg	cccttacctc	cacgcgggac	cgccccgcgc	agtcaactcc	120
tcgcacttttg	cccctgcttg	gcagcggata	aaagggggct	gaggaaatac	cggacacgtc	180
caccgcgttgc	cagctctagc	ctttaaatte	ccggctcggg	acctccacgc	accgggctag	240
cgccgacaac	cagctagcgt	gcaaggcgcc	gcggctcagc	gcgtaccggc	gggcttcgaa	300
accgcagtc	tccggcgacc	ccgaactccg	ctccggagcc	tcagccccct	ggaaagtgat	360
cccggcatcg	gagagccaag	atgccggccc	acttgctgca	ggacgatatc	tctagctcct	420
ataccaccac	caccaccatt	acagcgcttc	cctccagggt	cctgcagaat	ggaggagata	480
agttggagac	gatgccccct	tacttggaag	acgacattcg	ccctgatata	aaagatgata	540
tatatgaccc	cacctacaag	gataaggaag	gcccaagccc	caagggtgaa	tatgtctgga	600
gaaacatcat	ccttatgtct	ctgctacact	tgggagccct	gtatgggata	actttgatcc	660
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aaagcnaggt	aaattgtcgg	gggagagagt	tagcatgtat	gaatgtaagg	atgagggaag	2040
cgaagggaacc	tctcgccatg	atcagacata	cagctgccta	cctaataagg	acttcaagcc	2100
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ttcactcatt	tttttttgag	gagaaggggg	tctctgttaa	catctagcct	aaagtataca	2940
aactgcctgg	ggggcagggg	taggaatctc	ttcactaccc	tgattcttga	ttcctggctc	3000

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FIGURE 1

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taccctgtct	gtcccttttc	tttgaccaga	tctttctctt	ccctgaacgt	tttcttcttt	3060
ccctggacag	gcagcctcct	ttgtgtgtat	tcagaggcag	tgatgacttg	ctgtccaggc	3120
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cacgatttgc	aggattccct	tctgggcttc	attctggaaa	cttttgtag	ggctgctttt	4560
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cttttctgtg	attgggtggg	attttttccc	tttttatgtg	ggatatagta	gttacttgtg	5220
acaagaataa	ttttggaata	atttctatta	atatcaactc	tgaagcta	tgtactaatc	5280
tgagattgtg	tttgttcata	ataaaagtga	agtgaatctg	attgcactg		5329

FIGURE 1 (CONT.)

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CA12 DNA Sequence (SEQ ID NO:2)

gtactcgcca	cggcaccacg	gctgcgcgca	cgcgggtccc	gtgtgcagct	ggagagcgag	60
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ccggcgccag	ctgcacgcgg	cgcccgctgt	cctgtctggtg	atcttaaagg	aacagccttc	180
cagcccggcc	ccagtgaacg	gttccaagtg	gacttattht	ggctctgatg	gggagaatag	240
ctggtccaag	aagtaccctg	cgtgtggggg	cctgtctcag	tcccccatag	acctgcacag	300
tgacatcctc	cagtatgacg	ccagcctcac	gcccctcgag	ttccaaggct	acaatctgtc	360
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cgagctgcac	attgtccatt	ataactcaga	cctttatcct	gacgccagca	ctgccagcaa	600
caagtcagaa	ggcctcgctg	tcttggtgtg	tctcattgag	atgggctcct	tcaatccgtc	660
ctatgacaag	atcttcagtc	accttcaaca	tgtaaagtac	aaaggccagg	aagcattcgt	720
cccgggattc	aacattgaag	agctgcttcc	ggagaggacc	gctgaatatt	accgctaccg	780
gggggtccctg	accacacccc	cttgcaaccc	cactgtgctc	tggacagttt	tccgaaaccc	840
cgtgcaaat	tcccaggagc	agctgtctgg	tttgaggaca	gccctgtact	gcacacacat	900
ggacgaccct	tccccagag	aaatgatcaa	caacttccgg	caggtccaga	agttcgtatga	960
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gggcatcatc	ctctcactgg	ccctggctgg	cattgttggc	atctgtattg	tgggtgggtg	1080
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caagccagcc	accaagatgg	agactgaggc	ccacgcttga	ggtccccgga	gctccccggc	1200
acatccagga	aggaccttgc	tttgaccctt	acacacttgc	gctctctgga	cacttgccgac	1260
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ccctctgact	ctaagaattc	tctcttctgg	aatcgcttga	acccaggagg	cggaggttgc	2700
agtaagccaa	ggtcatgcc	ctgcactcta	gcctgggtga	cagagcgaga	ctccatctca	2760
aaaaaaaaaa	aaaaaa					2775

FIGURE 2

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PIK3R4 DNA Sequence (SEQ ID NO:3)

gcacgagggg	agttcggcgt	ttgctggggc	tgcagcagct	gaagtgtagt	gttttcttgg	60
gactggcggg	ctgcacttct	ctcccggtt	ccatctcccc	ccgcccgggtg	gtgaggccct	120
cgaggagggc	tccgacgggt	gtagcgatcc	gcgctagagg	aagacgaggc	ccgggaacgc	180
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cagaggaaga	ggaagacaaa	cttctggcac	tgaagacttt	catgatgaaa	tctaataaag	2940
caaaggccaa	tatagtggac	cagagccatc	ttcatgatag	tagtcagaaa	ggtgtaattg	3000

FIGURE 3

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acttggcagc	tttaggcata	actgggagac	aagttgatct	tgttaaaacc	aaacaagaac	3060
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taataccggt	tttaagtagt	acaatcttac	catccacctc	tcagattcga	attacaactt	3360
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catctgataa	tgggtgctgtc	cagcttcttg	gaattgaggc	ttctaagctg	cccaagtctc	3780
ctaaaaacca	tcctctacaa	agcagaattc	tagatcagaa	ggaggacggt	tgtgtttgtg	3840
atatgcatca	cttcaactct	ggagcacagt	ctgttcttgc	ctatgccact	gtgaatggct	3900
ctctggttgg	ctgggacctt	aggtcttcaa	gcaatgcgtg	gacttttaaag	catgatttaa	3960
agtcgggcct	catcacttcc	tttgctgtgg	acatccacca	atgctggctc	tgcatgtgta	4020
caagcagtgg	taccatggct	tgttgggaca	tgaggttcca	gttgccaatt	tcaagtcact	4080
gtcatccttc	cagggctcga	atcagacgcc	tctcaatgca	ccctctgtat	cagtcctggg	4140
tgattgcagc	tgttcagggc	aacaacgaag	tgtccatgtg	ggacatggag	actggtgaca	4200
gaagatttac	tctctgggcc	agcagtgcac	caccactttc	tgaattacag	ccttctcctc	4260
atagcgcca	tggtatctac	tgtagtccct	cagatggaaa	tcctatccta	ctaacagctg	4320
gctcagatat	gaaaataagg	ttttgggact	tggcttacc	agaaaggctc	tatgtttgtg	4380
caggaagtac	tagttcccca	tctgtgtcct	actacaggaa	aataattgaa	ggcactgaag	4440
ttgtccagga	aattcagaat	aagcagaaa	taggaccaag	tgatgacacc	cctcgaagg	4500
gcccagagtc	cctgcccgtg	ggacatcatg	acatcatcac	tgatgtcgcc	acattccaga	4560
ccacacaggg	cttcatcgta	actgcttcta	gagatgggat	tgtgaagggtg	tggaaataaa	4620
acctactgat	ttgtataaat	tttaatagtt	ataaatataa	tactataact	cgagaaaagg	4680
catttctaga	gaacagattc	atgtgcttaa	ttttcaaaat	tatgtctcca	tattactgtt	4740
tcatgactga	ctgactaaat	gacacccaaa	atgggttaaga	tgtacttgac	tagtttactt	4800
atgcatctct	ttgcaagaat	cagccagcca	acaatgtctg	ggatttttat	tgtatatgtt	4860
atagagggtga	gaaatgtaaa	atatgaaaat	gaatatgttt	atgtttgtatt	gaaaaagatg	4920
gttgaaaaga	tggttgtaag	ctattatagt	ataaacacat	ttttgctatt	aaaaatgcta	4980
ttcaaagcag	ttaaactgta	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	aaaaaaaaaa	5040
tcgagggggg	gcccgggtacc					5060

FIGURE 3 (CONT.)

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PLD3 DNA Sequence (SEQ ID NO:4)

ctctttataa	tttagtttcc	atagaagtta	tatgtgcatt	taaaaaaatt	caatgctgga	60
gcgaccgtgt	ctgggggagcc	gagccccgct	tctcgctgcg	gtgagccccg	actgggggcac	120
gcactgcgca	gactccccgc	tgcagtgggc	ggagtccac	aggccccgcc	cctcctccca	180
ccctcgttca	gcctgtccag	acagaagctg	gggcccagcg	gaggtagcag	cagacgcctg	240
agagcgaggc	cgaggccctc	agggtttgga	gacctgaca	caccacctt	ctcacctggg	300
ctctgcgtat	ccccagcct	tgagggaaga	tgaagcctaa	actgatgtac	caggagctga	360
agggtgcctgc	agaggagccc	gccaatgagc	tgcccatgaa	tgagattgag	gcgtggaagg	420
ctgcggaaaa	gaaagccgc	tgggtcctgc	tggtcctcat	tctggcggtt	gtgggcttcg	480
gagcctgatg	actcagctgt	ttctatggga	atacggcgac	ttgcatctct	ttgggcccac	540
ccagcgccca	gccccctgct	atgacccttg	cgaagcagtg	ctggtggaaa	gcattcctga	600
gggcctggac	ttccccaatg	cctccacggg	gaacccttcc	accagccagg	cctggctggg	660
cctgctcgcc	ggtcggcaca	gcagcctgga	catcgctcc	ttctactgga	ccctaccaa	720
caatgacacc	cacacgcagg	agccctctgc	ccagcagggt	gaggagggtcc	tccggcagct	780
gcagaccctg	gcaccaaagg	gcgtgaacgt	ccgcctcgct	gtgagcaagc	ccagcggggc	840
ccagccacag	gcggacctgc	aggctctgct	gcagagcggt	gccaggtcc	gcattggtgga	900
catgcagaag	ctgacccatg	gcgtcctgca	taccaagttc	tgggtggtgg	accagacca	960
cttctacctg	ggcagtgcc	acatggactg	gcgttcaactg	acccaggtca	aggagctggg	1020
cgtggctcatg	tacaactgca	gctgcctggc	tcgagacctg	accaagatct	ttgaggccta	1080
ctgggttcctg	ggccaggcag	gcagctccat	cccataact	tggccccggt	tctatgacac	1140
ccgctacaac	caagagacac	caatggagat	ctgcctcaat	ggaaccctg	ctctggccta	1200
cctggcgagt	gcgccccccac	ccctgtgtcc	aagtggccgc	actccagacc	tgaaggctct	1260
actcaacgtg	gtggacaatg	cccggagttt	catctacgtc	gctgtcatga	actacctgcc	1320
cactctggag	ttctcccacc	ctcacagggt	ctggcctgcc	attgacgatg	ggctgcggcg	1380
ggccacctac	gagcgtggcg	tcaagggtgcg	cctgctcatc	agctgctggg	gacactcgga	1440
gccatccatg	cgggccttcc	tgctctctct	ggctgccttg	cgtgacaacc	ataccactc	1500
tgacatccag	gtgaaactct	ttgtgggtccc	cgcggatgag	gccaggtc	gaatccata	1560
tggcctgtg	aaccacaaca	agtacatggg	gactgaacgc	gccacctaca	tcggaacctc	1620
caactgggtct	ggcaactact	tcacggagac	ggcgggcacc	tcgctgctgg	tgacgcagaa	1680
tgggaggggc	ggcctgcgga	gccagctgga	ggccattttc	ctgagggact	gggactcccc	1740
ttacattcat	gaccttgaca	cctcagctga	cagcgtgggc	aacgcctgcc	gcctgctctg	1800
aggccccgatc	cagtgggcag	gccaaggcct	gctgggcccc	cgcggaacca	ggtgctctgg	1860
gtcacgggtcc	ctgtccccgc	acccccgctt	ctgtctgccc	cattgtggct	cctcaggctc	1920
tctcccctgc	tctcccacct	ctacctccac	ccccaccggc	ctgacgctgt	ggccccggga	1980
cccagcagag	ctgggggagg	gatcagcccc	caaagaaatg	ggggtgcatg	ctggcctgcc	2040
ccctggccca	ccccacttt	ccagggcaaa	aaggggccag	ggttataata	agtaaataac	2100

ttgtctgtaa aaaaaaaaaa aaaaaaaaaa a

FIGURE 4

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HSPD1 DNA Sequence (SEQ ID NO:5)

ggcaccgaggc	gacgacctgt	ctcgccgagc	gcacgccttg	ccgccgcccc	gcagaaatgc	60
ttcgggttacc	cacagtcttt	cgccagatga	gaccggtgtc	caggggtactg	gtcctctcatc	120
tcactcgggc	ttatgccaaa	gatgtaaaat	ttggtgcaga	tgcccagagcc	ttaatgcttc	180
aagggtgtaga	ccttttagcc	gatgctgtgg	ccgttacaat	ggggccaaag	ggaagaacag	240
tgattattga	gcagagttgg	ggaagtccca	aagtaacaaa	agatggtgtg	actggtgcaa	300
agtcaattga	cttaaaagat	aaatacaaaa	acattggagc	taaacttggt	caagatgttg	360
ccaataacac	aaatgaagaa	gctggggatg	gcactaccac	tgctactgta	ctggcacgct	420
ctatagccaa	ggaaggcttc	gagaagatta	gcaaagggtg	taatccagtg	gaaatcagga	480
gagggtgtgat	gttagctgtt	gatgctgtaa	ttgctgaact	taaaaagcag	tctaaacctg	540
tgaccacccc	tgaagaaatt	gcacagggtg	ctacgatttc	tgcaaacgga	gacaaagaaa	600
ttggcaatat	catctctgat	gcaatgaaaa	aagttggaag	aaagggtgtc	atcacagtaa	660
aggatggaaa	aacactgaat	gatgaattag	aaattattga	aggcatgaag	tttgatcgag	720
gctatatattc	tccatacttt	attaatacat	caaaagggtc	gaaatgtgaa	ttccaggatg	780
cctatgttct	gttgagtga	aagaaaattt	ctagtatcca	gtccattgta	cctgctcttg	840
aaattgccaa	tgctcaccgt	aagccttttg	tcataatcgc	tgaagatgtt	gatggagaag	900
ctctaagtac	actcgtcttg	aataggctaa	aggttggctc	tcagggtgtg	gcagtcaagg	960
ctccagggtt	tggtgacaat	agaaagaacc	agcttaaaga	tatggctatt	gctactgggtg	1020
gtgcagtgtt	tggaagaagag	ggattgacct	tgaattctga	agacgttcag	cctcatgact	1080
taggaaaagt	tggaagggtc	attgtgacca	aagacgatgc	catgctctta	aaaggaaaag	1140
gtgacaaggc	tcaaattgaa	aaacgtattc	aagaaatcat	tgagcagtta	gatgtcacaa	1200
ctagtgaata	tgaaaaggaa	aaactgaatg	aacggcttgc	aaaactttca	gatggagtgg	1260
ctgtgctgaa	ggttggtggg	acaagtgatg	ttgaagtga	tgaaaagaaa	gacagagtta	1320
cagatgccct	taatgctaca	agagctgctg	ttgaagaagg	cattgttttg	ggaggggggt	1380
gtgccctcct	tcgatgcatt	ccagccttgg	actcattgac	tccagctaata	gaagatcaaa	1440
aaattggtat	agaaattatt	aaaagaacac	tcaaaattcc	agcaatgacc	attgctaaga	1500
atgcagggtg	tgaaggatct	ttgatatgtg	agaaaattat	gcaaagtctc	tcagaagtgt	1560
gttatgatgc	tatggctgga	gattttgtga	atatggtgga	aaaagggaatc	attgacccaa	1620
caaaggttgt	gagaactgct	ttattggatg	ctgctggtgt	ggcctctctg	ttaactacag	1680
cagaagttgt	agtcacagaa	attcctaaag	aagagaagga	ccctggaatg	ggtgcaatgg	1740
gtggaatggg	aggtggtatg	ggagggtggc	tgcttctaact	cctagactag	tgctttacct	1800
ttattaatga	actgtgacag	gaagcccaag	gcagtgttcc	tcaccaataa	cttcagagaa	1860
gtcagttgga	gaaaatgaag	aaaaaggctg	gctgaaaatc	actataacca	tcagttactg	1920
gtttcagttg	acaaaatata	taatggttta	ctgctgtcat	tgtccatgcc	tacagataat	1980
ttattttgta	tttttgaata	aaaaacattt	gtacattcct	gatactgggt	acaagagcca	2040
tgtaccagtg	tactgctttc	aacttaaatac	actgaggcat	ttttactact	attctgttaa	2100
aatcaggatt	ttagtgcctg	ccaccaccag	atgagaagtt	aagcagcctt	tctgtggaga	2160
gtgagaataa	ttgtgtacaa	agtagagaag	tatccaatta	tgtgacaacc	tttgtgtaat	2220
aaaaatttgt	ttaaagttaa	aaaaaaaaaa	aaaaaaaaaa			2258

FIGURE 5

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ZPK Variant 2 DNA Sequence (SEQ ID NO:6)

agcatccgga	gcggagctgc	agcagcgccg	ccttttgtgc	tgcgccgcgc	gagccccga	60
gggcccagtg	ttcaccatca	taccaggggc	cagaggcgat	ggcttgccctc	catgagaccc	120
gaacaccctc	tccttccttt	gggggctttg	tgtctaccct	aagtgaggca	tccatgcgca	180
agctggaccc	agacacttct	gactgcactc	ccgagaagga	cctgacgcct	acccatgtcc	240
tgcagctaca	tgagcaggat	gcagggggcc	cagggggagc	agctgggtca	cctgagagtc	300
gggcatccag	agttcgagct	gacgaggtgc	gactgcagtgc	ccagagtggc	agtggcttcc	360
ttgagggcct	ctttggctgc	ctgcgccctg	tctggaccat	gattggcaaa	gcctactcca	420
ctgagcacia	gcagcagcag	gaagaccttt	gggaggtccc	ctttgaggaa	atcctggacc	480
tgagtggtg	gggctcaggg	gcccaggggtg	ctgtcttccct	ggggcgcttc	cacggggagg	540
aggtggctgt	gaagaaggtg	cgagacctca	aagaaaccga	catcaagcac	ttgcgaaagc	600
tgaagcacc	caacatcatc	actttcaagg	gtgtgtgcac	ccaggctccc	tgctactgca	660
tcctcatgga	gttctgcgcc	cagggccagc	tgtatgaggt	actgcgggct	ggccgccttg	720
tcacccctc	cttactgggt	gactggtcca	tgggcatcgc	tggtggcatg	aactacctgc	780
acctgcacia	gattatccac	aggtatctca	agtcacccaa	catgctaata	acctacgacg	840
atgtggtgaa	gatctcagat	tttggcactt	ccaaggagct	gagtgcacaag	agcacaaga	900
tgctctttgc	agggacagta	gcctggatgg	cccctgaggt	gatccgcaat	gaacctgtgt	960
ctgagaaggt	cgacatctgg	tcctttggcg	tggtgctatg	ggaactgctg	actggtgaga	1020
tcctctacaa	agacgtagat	tcctcagcca	ttatctgggg	tggtgggaagc	aacagtctcc	1080
atctgcccgt	gccctccagt	tgcccagatg	gtttcaagat	cctgcttcgc	cagtgtctga	1140
atagcaaac	acgaaatcgc	ccatcattcc	gacagatcct	gctgcatctg	gacattgcct	1200
cagctgatgt	actctccaca	ccccaggaga	cttactttaa	gtcccaggca	gagtggcggg	1260
aagaagtaaa	actgcacttt	gaaaagatta	agtcagaagg	gacctgtctg	caccgcctag	1320
aagaggaact	ggtgatgagg	aggagggagg	agctcagaca	cgccctggac	atcaggggagc	1380
actatgaaag	gaagctggag	agagccaaca	acctgtatat	ggaacttaat	gccctcatgt	1440
tgagctgga	actcaaggag	agggagctgc	tcaggcgaga	gcaagcttta	gagcggaggt	1500
gcccaggcct	gctgaagcca	cacccttccc	ggggcctcct	gcatggaaac	acaatggaga	1560
agcttatcaa	gaagaggaat	gtgccacaga	agctgtcacc	ccatagcaaa	aggccagata	1620
tcctcaagac	ggagtctttg	ctccctaaac	tagatgcagc	cctgagtggg	gtggggcttc	1680
ctgggtgtcc	taaggccccc	ccctcaccag	gacggagtgc	ccgtggcaag	accgctcacc	1740
gcaaggccag	cgccaagggg	agctgtgggg	acctgctctg	gcttcgtaca	gctgtgccac	1800
cccatgaacc	tggaggacca	ggaagcccag	ggggcctagg	agggggaccc	tcagcctggg	1860
aggcctgccc	tcctgccttc	cgtgggcttc	atcatgacct	cctgctccgc	aaaatgtctt	1920
catcgtcccc	agacctgctg	tcagcagcac	tagggctccg	gggccggggg	gccacaggcg	1980
gagctgggga	tcctggctca	ccacctccgg	cccgggggtga	cacccaccca	agtgagggct	2040
cagcccttgg	ctccaccagc	ccagattcac	ctggggggagc	caaaggggaa	ccacctcctc	2100
cagtagggcc	tggtagaggt	tgggggcttc	tggaagctgg	aagggaaggg	acctcaggcc	2160
ggggaggaag	ccgggctggg	tcctcagact	tgacccagc	tgactgctg	tacagggctg	2220
ccgtcaccgg	aagtcagaaa	cgtggcatct	catcggaaga	ggaggaagga	gaggtagaca	2280
gtgaagtaga	gctgacatca	agccagaggt	ggcctcagag	cctgaacatg	cgccagtcac	2340
tatctacctt	cagctcagag	aatccatcag	atggggagga	aggcacagct	agtgaacctt	2400
ccccagtg	cacacctgaa	gttggcagca	ccaacactga	tgagcggcca	gatgagcggt	2460
ctgatgacat	gtgctcccag	ggctcagaaa	tcctactgga	cccacctcct	tcagaggtca	2520
tccttgcccc	tgaaccagc	tcctgcccc	ttccacacca	ggaacttctc	agagagcggg	2580
gccctcccaa	ttctgaggac	tcagactgtg	acagcactga	attggacaac	tccaacagcg	2640
ttgatgcctt	gcggccccca	gcttccctcc	ctccatgaaa	gccactcgta	ttccttgtac	2700
atagagaaat	atttatatgg	atttatatata	tatacatata	tatatatata	tgcgccacat	2760
aatcaacaga	aagatggggc	tgtcccagcc	gtaagtcagg	ctcgagggag	actgatcccc	2820
tgaccaatc	acctgataaa	ctctagggac	actggcagct	gtggaaatga	atgaggcaca	2880
gccgtagagc	tgtggctaag	ggcaagcccc	ttcctgcccc	acccatttcc	ttatatccag	2940
caagcaacaa	ggcaatagaa	aagccagggt	tgtctttata	ttcttttatcc	ccaaataata	3000
gggggtgggg	ggagggggcg	tgggaggggc	aggagagaaa	accacttaga	ctgcactttt	3060
ctgttccgtt	tactctgttt	acacattttg	cacttgggag	gagggaggct	aaggctgggt	3120
cctccctctt	gaggtttctc	aggtggcaat	gtaactcatt	tttttgtccc	accattttatc	3180
ttctctgccc	aagccctgtc	ttaaggccca	gggggaggtt	aggagactga	tagcatgtga	3240
tggtcaggc	tgaagaaccg	gggtgctgtt	taagtccctg	cttttatcct	ggtgcctgat	3300
tggggtgggg	actgtcctac	tgtaaccctt	gtgaaaaacc	ttgaaatata	acactccatg	3360
cagga						3365

FIGURE 6

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SCD Amino Acid Sequence (SEQ ID NO:7)

MPAHLQDDI	SSSYTTTTTI	TAPPSRVLQN	GGDKLETMPL	YLEDDIRPDI	KDDIYDPTYK	60
DKEGSPKVE	YVWRNIILMS	LLHLGALYGI	TLIPTCKFYT	WLWGVFYYFV	SALGITAGAH	120
RLWSHRSYKA	RLPLRLFLII	ANTMAFQNDV	YEWARDHRAH	HKFSETHADP	HNSRRGFFFS	180
HVGWLLVRKH	PAVKEKGSTL	DLSDLEAEKL	VMFQRRYYKP	GLLLMCFILP	TLVPWYFWGE	240
TFQNSVFBAT	FLRYAVVLNA	TWLVNSAAHL	FGYRPYDKNI	SPRENILVSL	GAVGEGFHNY	300
HHSFPYDYS	SEYRWHINFT	TFFIDCMAAL	GLAYDRKKVS	KAAILARIKR	TGDGNYKSG	359

FIGURE 7

CA12 Amino Acid Sequence (SEQ ID NO:8)

MPRRSLHAAA	VLLLVLKEQ	PSSPAPVNGS	KWTYFGPDGE	NSWSKKYPSC	GGLLQSPIDL	60
HSDILQYDAS	LTPLEFQGYN	LSANKQFLLT	NNGHSVKLNL	PSDMHIQGLQ	SRYSATQLHL	120
HWGNPNDPHG	SEHTVSGQHF	AAELHIVHYN	SDLYPDASTA	SNKSEGLAVL	AVLIEMGSFN	180
PSYDKIFSHL	QHVKYKGQEA	FVPGFNIEEL	LPERTAEEYR	YRGSLLTPPC	NPTVLWTVFR	240
NPVQISQEQ	LALETALYCT	HMDDPSPREM	INNFRQVQKF	DERLVYTSFS	QVQVCTAAGL	300
SLGIILSLAL	AGILGICIVV	VVSIWLFRRK	SIKKGDNKG	IYKPAKMET	EAHA	354

FIGURE 8

PIK3R4 Amino Acid Sequence (SEQ ID NO:9)

MGNQLAGIAP	SQILSVESYF	SDIHDFEYDK	SLGSTFFFKV	ARAKHREGLV	VVKVFAIQDP	60
TLPLTSYKQE	LEELKIRLNS	AQNCLPFQKA	SEKASEKAAM	LFRQYVRDNL	YDRISTRPFL	120
NNIEKRWIAF	QILTAVDQAH	KSGVRHGDIK	TENVMVTSWN	WVLLTDFASF	KPTYLPEDNP	180
ADFNFFDTS	RRRTCZIAPE	RFVDGGMFAT	ELEYMRDPST	PLVDLNSNQR	TRGELKRAMD	240
IFSAGCVIAE	LFTEGVPLFD	LSQLLAYRNG	HFFPEQVLNK	IEDHSIRELV	TQMIHREPDK	300
RLEAEDYLKQ	QRGNAPPEIF	YTFLLQPYMAQ	FAKETFLSAD	ERILVIRKDL	GNIIHNLGCH	360
DLPEKAEGEP	KENGLVILVS	VITSCLQTLK	YCDSKLAAL	LILHLAPRLS	VEILLDRITP	420
YLLHFSNDSV	PRVRAEALRT	LTKVLALVKE	VPRNDINIYP	EYILPGIAHL	AQDDATIVRL	480
AYAENIALLA	ETALRFLELV	QLKNLNMEND	PNNEEIDEVT	HPNGNYDTEL	QALHEMVQQK	540
VVTLLSDPEN	IVKQTLMEG	ITRLCVFFGR	QKANDVLLSH	MITFLNDKND	WHLRGAFFDS	600
IVGVAAYVGW	QSSSILKPLL	QQGLSDAEF	VIVKALYALT	CMCQLGLLQK	PHVYEFASDI	660
APFLCHPNLW	IRYGAVGFIT	VVARQISTAD	VYCKLMPYLD	PYITQPIIQI	ERKLVLVSVL	720
KEPVRSIFD	YALRSKDITS	LFRHLHMRQK	KRNGSLPDCP	PPEDPAIAQL	LKKLLSQGMT	780
EEEEKLLAL	KDFMMKSNKA	KANIVDQSHL	HDSSQKGVID	LAALGITGRQ	VDLVKTKQEP	840
DDKRARKHVK	QDSNVNEEWK	SMFGSLDPPN	MPQALPKGSD	QEVITQTKPP	RSESSAGICV	900
PLSTSSQVPE	VTTVQNKPKV	IPVLSSTILP	STYQIRITTC	KTELQQLIQK	KREQCNAERI	960
AKQMMENAEW	ESKPPPPGWR	PKGLLVAHLH	EHKSAVNRIR	VSDEHSLFAT	CSNDGTVKIW	1020
NSQKMEGKIT	TTRSILTYSR	IGGRVKTTLF	CQGSHYLAIA	SDNGAVQLLG	IEASKLPKSP	1080
KIHLPLQSRIL	DQKEDGCVVD	MHHFNSGAQS	VLAYATVNGS	LVGWDLRSSS	NAWTLKHDLDK	1140
SGLITSFAVD	IHQWCWLCIGT	SSGTMACWDM	RFQLPISSHC	HPSRARIRRL	SMHPLYQSWV	1200
IAAVQGNNEV	SMWDMETGDR	RFTLWASSAP	PLSELQPSPH	SVHGIYCSPA	DGNPILLTAG	1260
SDMKIRFWDL	AYPERSYVVA	GSTSSPSVSY	YRKIEGTEV	VQEIQNKQKV	GPSDDTPRRG	1320
PESLPVGHHD	IITDVATFQT	TQGFIVTASR	DGIVKVWK			1358

FIGURE 9

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PLD3 Amino Acid Sequence (SEQ ID NO:10)

MTQLFLWEYG	DLHLFGPNQR	PAPCYDPCEA	VLVESIPEGL	DFPNASTGNP	STSQAWLGLL	60
AGAHSSLDIA	SFYWTLTNND	THTQEPSAQQ	GEEVLRQLQT	LAPKGVNVRI	AVSKPSGPQP	120
QADLQALLQS	GAQVRMVDQ	KLTHGVLHTK	FWVVDQTHFY	LGSANMDWRS	LTQVKELGVV	180
MYNCSCLARD	LTKIFEAYWF	LGQAGSSIPS	TWPRFYDTRY	NQETPMEICL	NGTPALAYLA	240
SAPPPLCPSG	RTPDLKALLN	VVDNARSFIY	VAVMNYLPTL	EFSPHPRFWP	AIDDLRRAT	300
YERGVKVRLL	ISCWGHSEPS	MRAFLLSLAA	LRDNHTHSDI	QVKLFVVPAD	EAQARIPYAR	360
VNHNKYMVTE	RATYIGTSNW	SGNYFTETAG	TSLLVQTQNGR	GGLRSQLEAI	FLRDWDSPIY	420
HDLDTADSVD	GNACRLD					437

FIGURE 10

HSPD1 Amino Acid Sequence (SEQ ID NO:11)

MLRLPTVFRQ	MRPVSRVLAP	HLTRAYAKDV	KFGADARALM	LQGVDDLADA	VAVTMGPKGR	60
TVIEQSWGS	PKVTKDGVT	AKSIDLKDKY	KNIGAKLVQD	VANNTNEEAG	DGTTTATVLA	120
RSIAKEGFKE	ISKGANPVEI	RRGVMLAVDA	VIAELKKQSK	PVTTPEEIAQ	VATISANGDK	180
EIGNIISDAM	KKVGRKGVIT	VKDGTKLNDE	LEIIEGMKFD	RGYISPYFIN	TSKGQKCEFQ	240
DAYVLLSEKK	ISSIQSIVPA	LEIANAHKRP	LVIIAEDVDG	EALSTLVVLR	LKVGLQVVAV	300
KAPGFGDNRK	NQLKDMAIAT	GGAVFGEEGL	TLNLEDVQPH	DLGKVGEVIV	TKDDAMLLKG	360
KGDKAQIEKR	IQEIIIEQLDV	TTSEYEKEKL	NERLAKLSDG	VAVLKVGGS	DVEVNEKKDR	420
VTDALNATRA	AVEEGIVLGG	GCALLRCIPA	LDSLTPANED	QKIGIEIKR	TLKIPAMTIA	480
KNAGVEGSLI	VEKIMQSSSE	VGYDAMAGDF	VNMVEKGIID	PTKVVRTALL	DAAGVASLLT	540
TAEVVVTEIP	KEEKDPGMGA	MGMGMGGMGG	GMF			573

FIGURE 11

ZPK Variant 2 Amino Acid Sequence (SEQ ID NO:12)

MACLHETRTP	SPSFGGFVST	LSEASMRKLD	PDTSDCTPEK	DLTPTHVLQL	HEQDAGGPGG	60
AAGSPESRAS	RVRADDEVRLQ	CQSGSGFLEG	LFGCLRPFVWT	MIGKAYSTEH	KQQQEDLWEV	120
PFEEILDLOW	VGSGAQGAVF	LGRFHGEEVA	VKKVRDLKET	DIKHLRKLKH	PNIITFKGVC	180
TQAPCYCILM	EFCAQGQLYE	VLRAGRPVTP	SLLVDWSMGI	AGGMNYLHLH	KIIHRDLKSP	240
NMLITYDDVV	KISDFGTSKE	LSDKSTKMSF	AGTVAWMAPE	VIRNEPVSEK	VDIWSFGVVL	300
WELLTGEIPY	KDVDSSAIIW	GVGSNSLHLP	VPSSCPDGFK	ILLRQCWNSK	PRNRPSFRQI	360
LLHLDIASAD	VLSTPQETYF	KSQAEWREEV	KLHFEKIKSE	GTCLHRLEEE	LVMRRREELR	420
HALDIREHYE	RKLERANNLY	MELNALMLQL	ELKERELLRR	EQALERRCPG	LLKPHPSRGL	480
LHGNTMEKLI	KKRNVQKLS	PHSKRPDILK	TESLLPKLDA	ALSGVGLPGC	PKAPPSPGRS	540
RRGKTRHRKA	SAKGSCGDLP	GLRTAVPPHE	PGGPGSPGGL	GGGPSAWEAC	PPALRGLHHD	600
LLLRKMSSSS	PDLLSAALGS	RGRGATGGAG	DPGSPPPARG	DTPPSEGSAP	GSTSPDSPGG	660
AKGEPPPPVG	PGEVGLLGT	GREGTSGRGG	SRAGSQHLTP	AALLYRAAVT	RSQKRGISSE	720
EEEGEVDSEV	ELTSSQRWPQ	SLNMRQSLST	FSENPSDGE	EGTASEPSPS	GTPEVGSTNT	780
DERPDERSD	MCSQGSEIPL	DPPPSEVIPG	PEPSSLPPIH	QELLRERGPP	NSESDCDST	840
ELDNSNSVDA	LRPPASLPP					859

FIGURE 12

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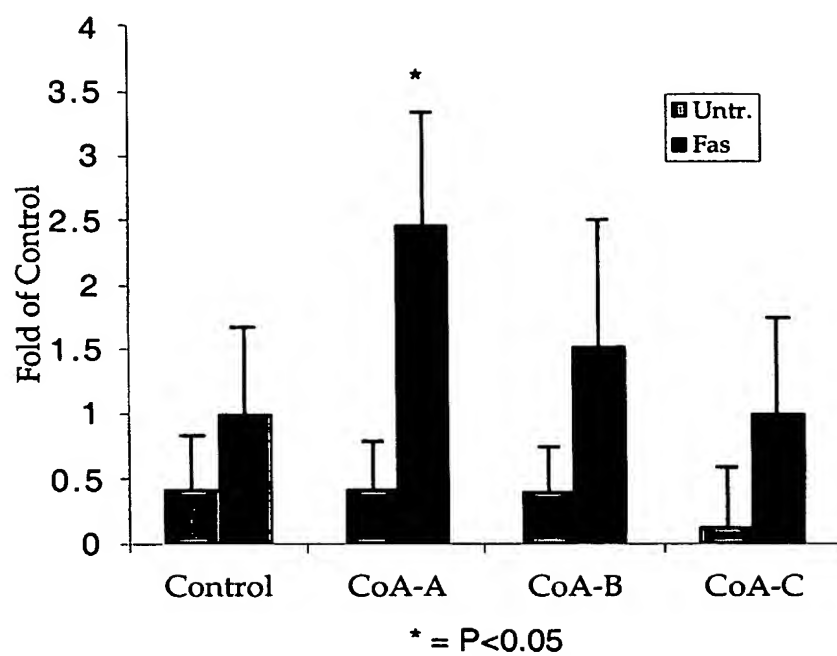


FIGURE 13A

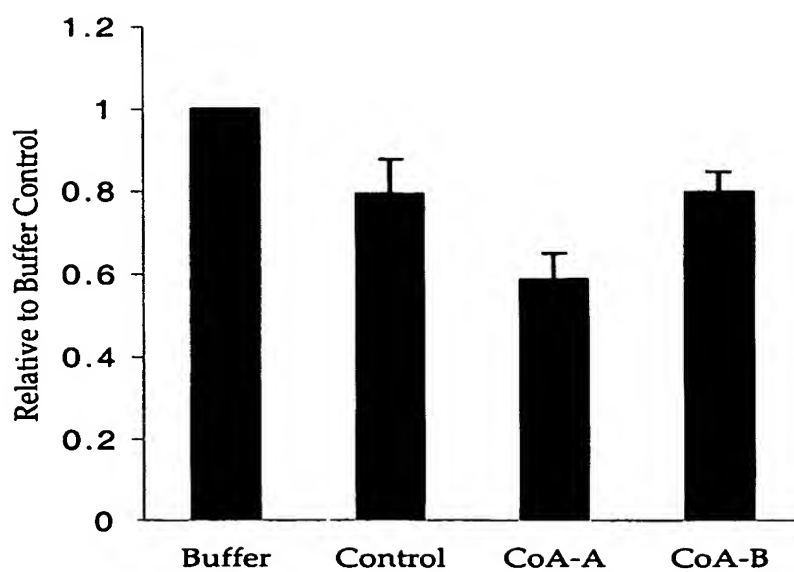


FIGURE 13B

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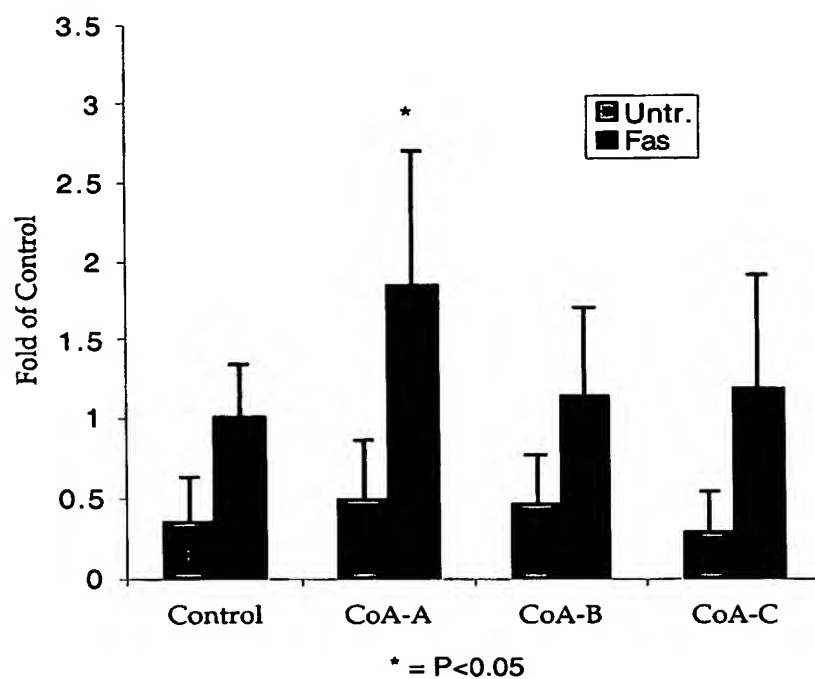


FIGURE 14A

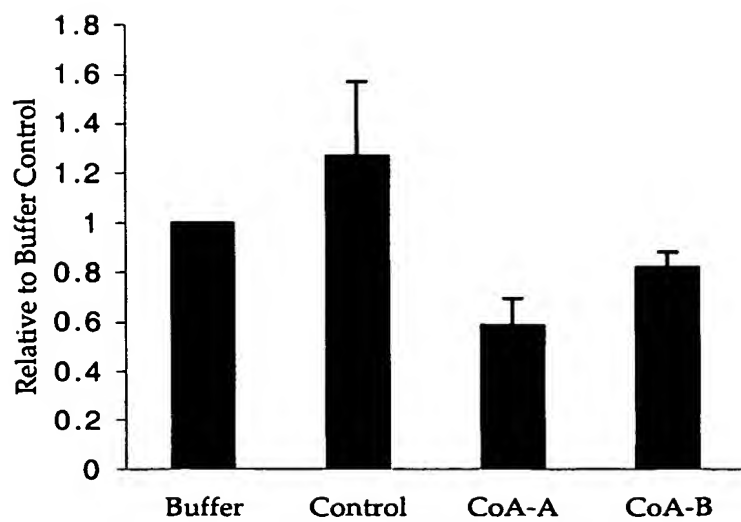


FIGURE 14B

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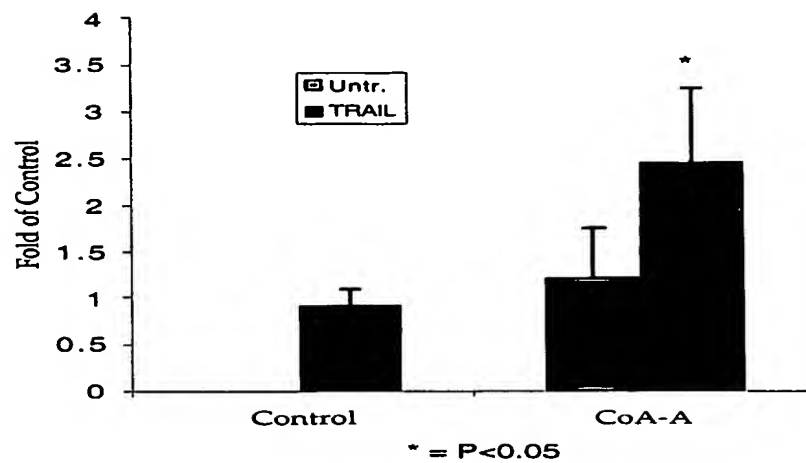


FIGURE 15A

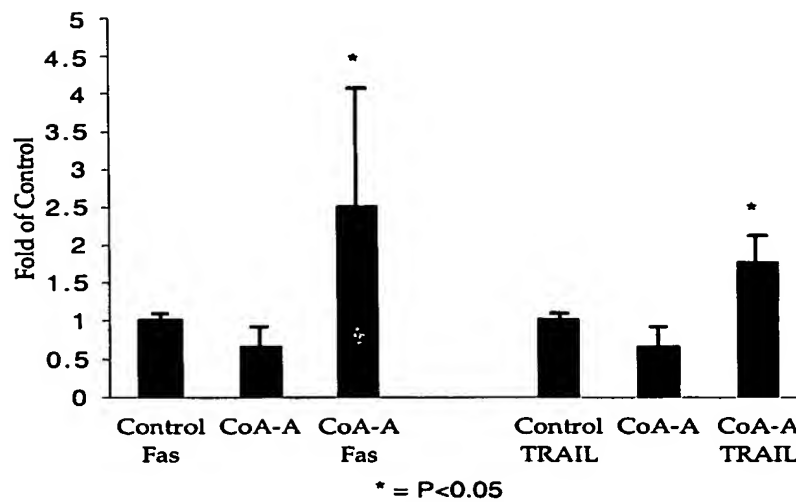


FIGURE 15B

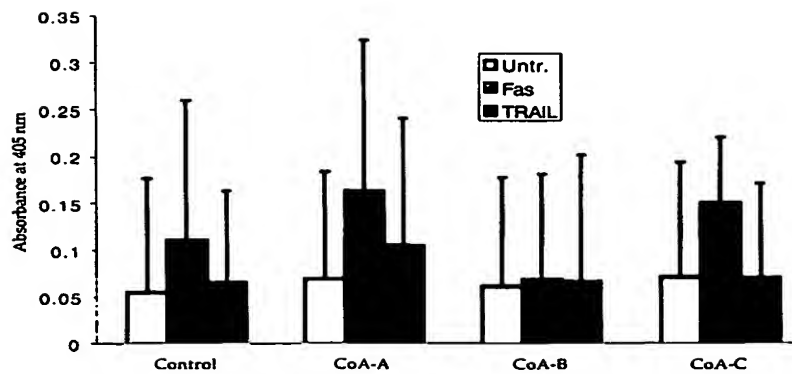


FIGURE 16

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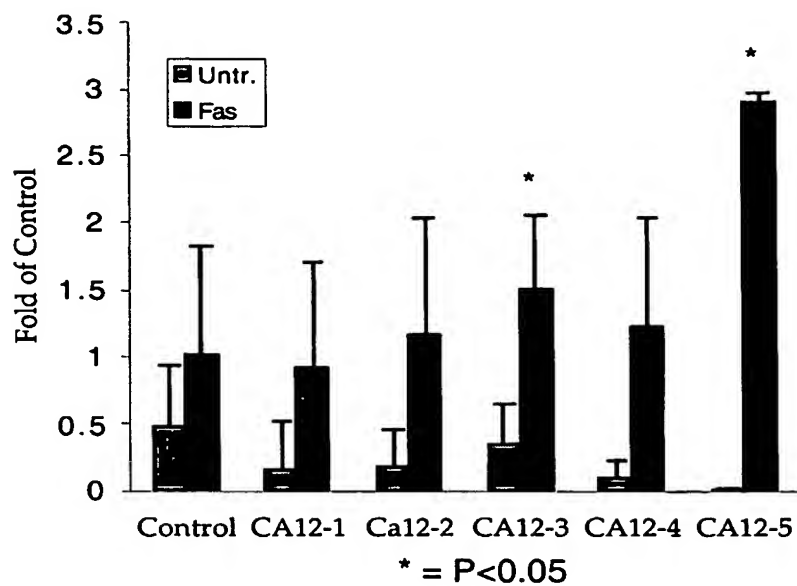


FIGURE 17A

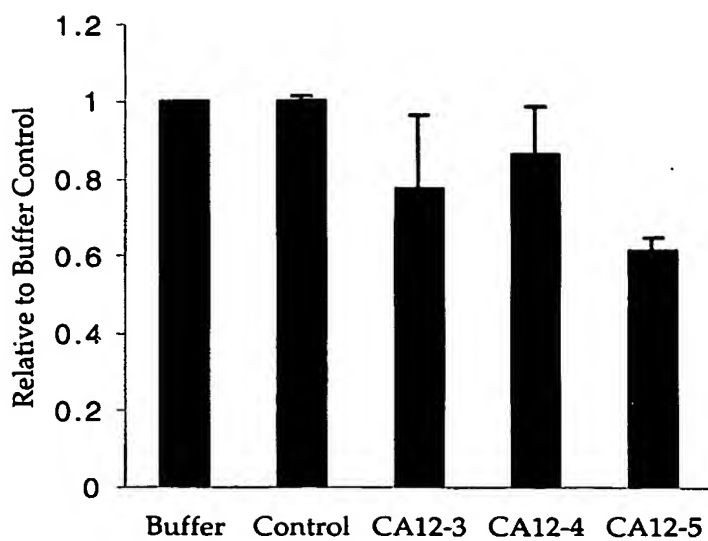


FIGURE 17B

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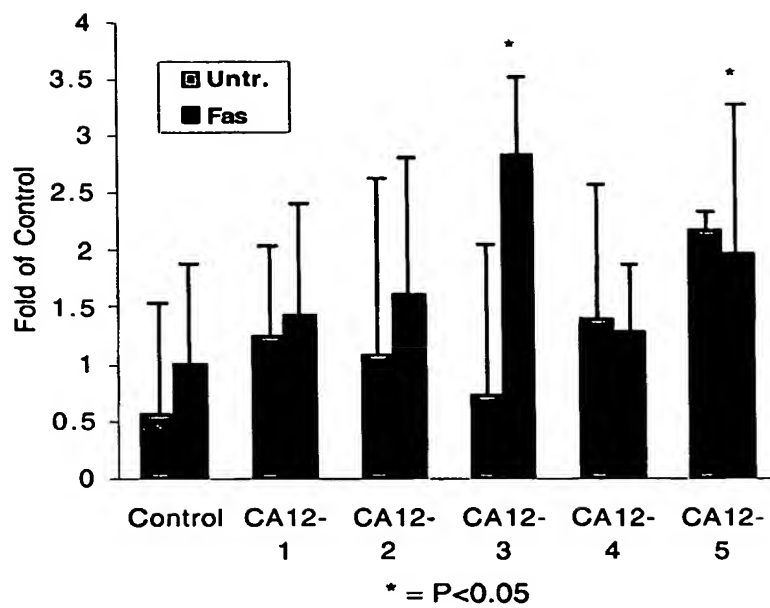


FIGURE 18A

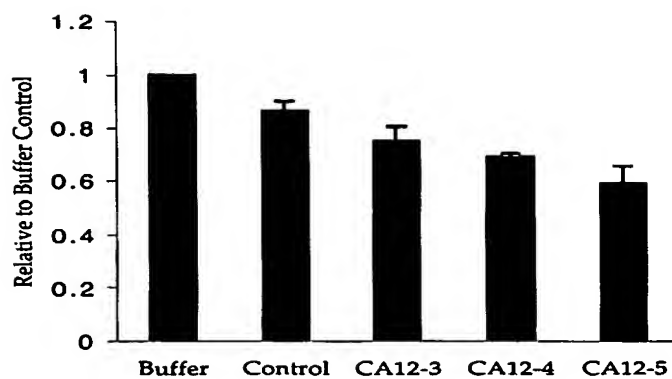


FIGURE 18B

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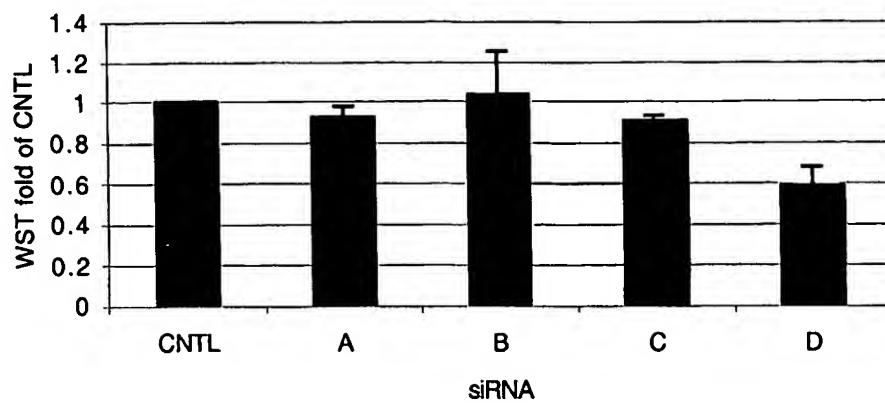


FIGURE 19

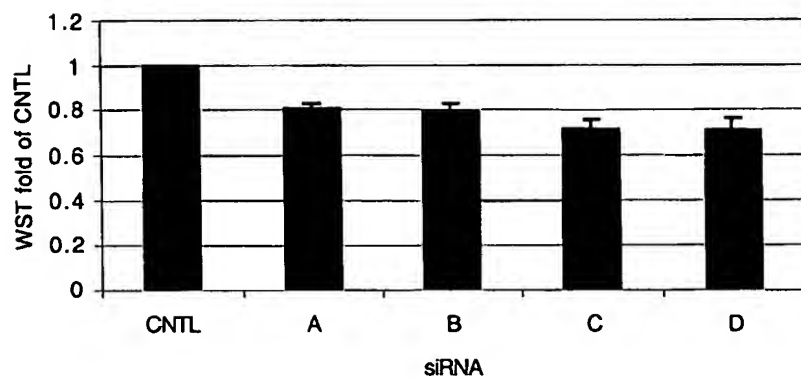


FIGURE 20A

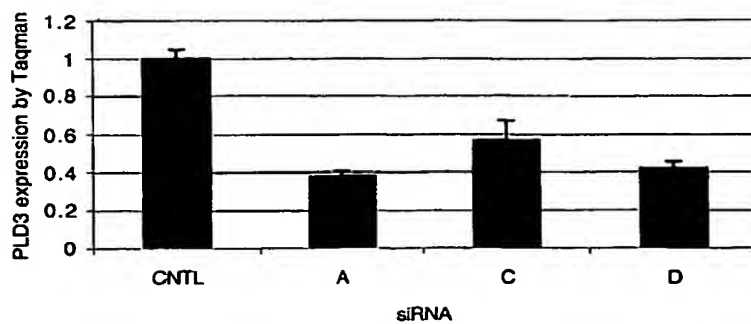


FIGURE 20B

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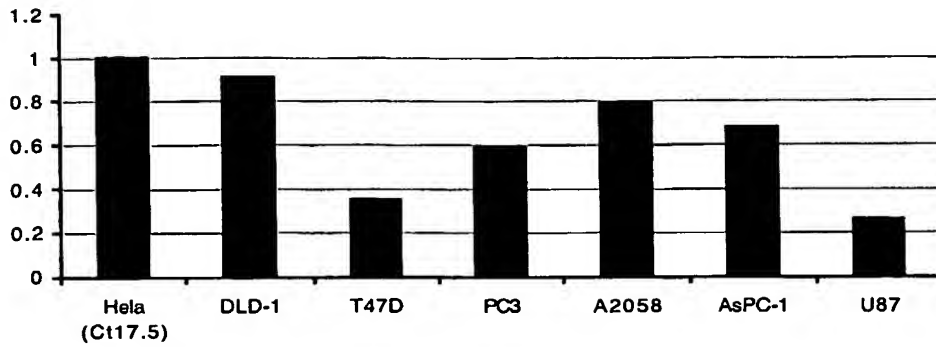


FIGURE 21

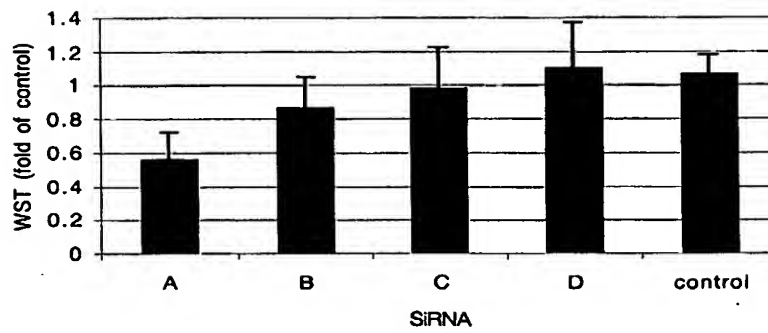


FIGURE 22A

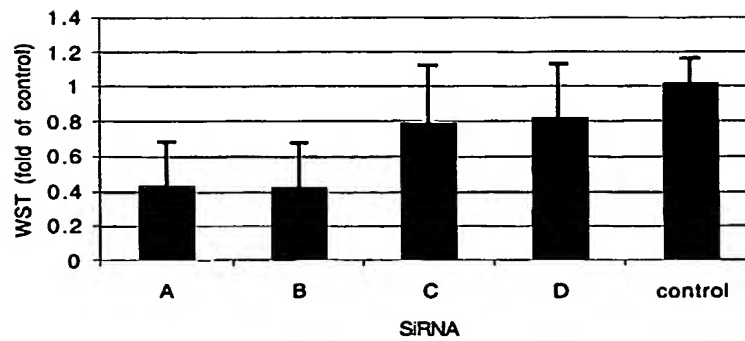


FIGURE 22B

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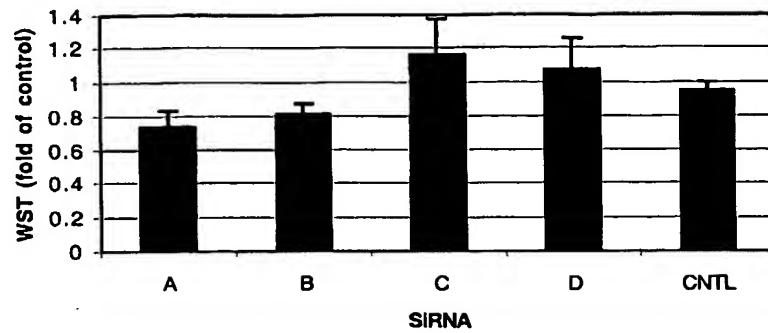


FIGURE 23A

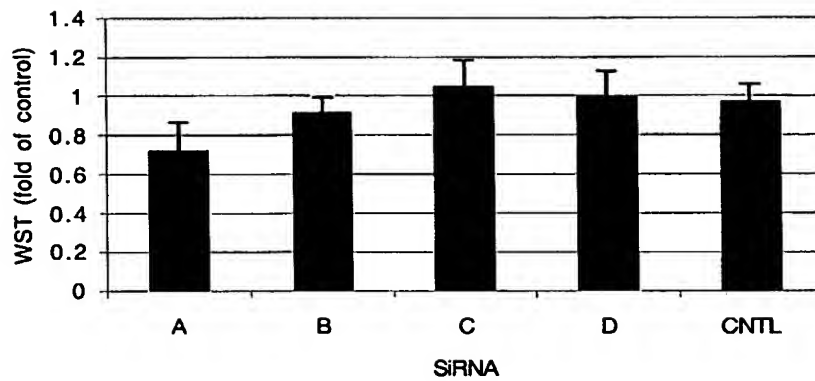


FIGURE 23B

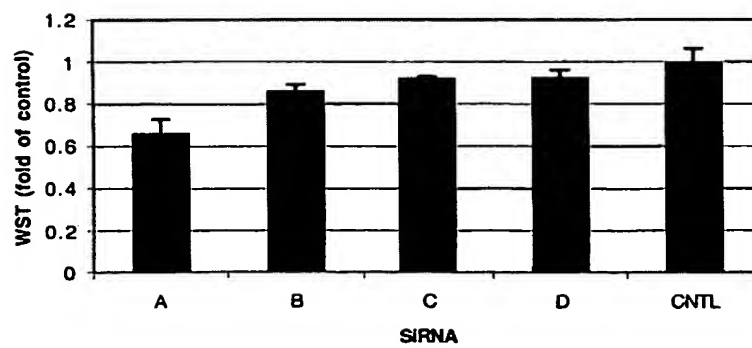


FIGURE 24

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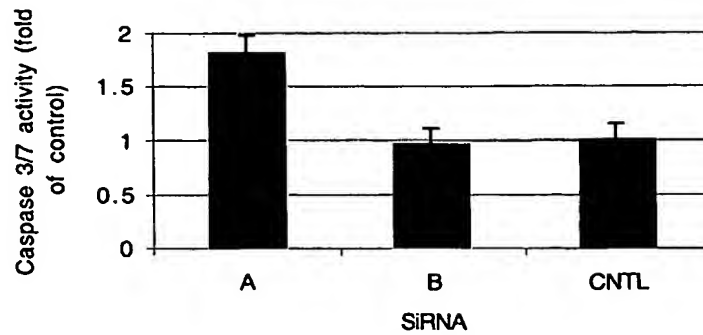


FIGURE 25

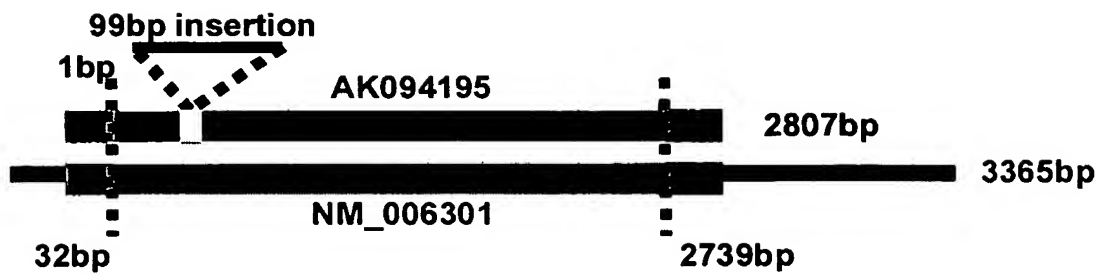


FIGURE 26

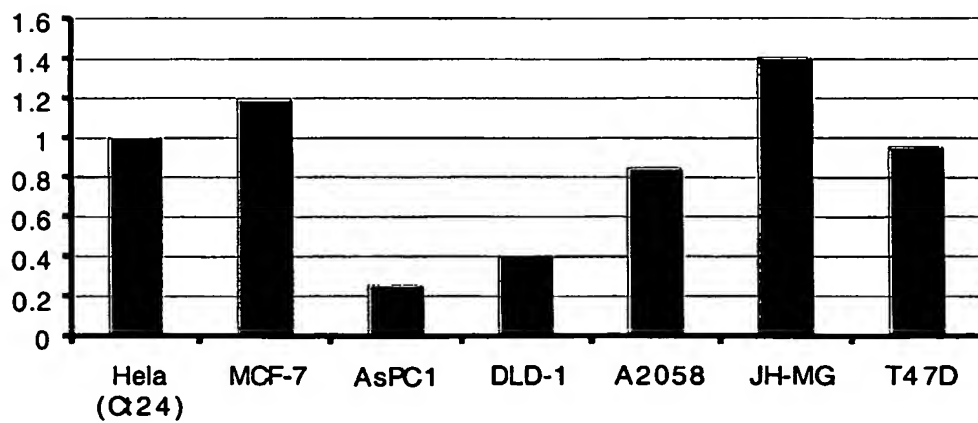


FIGURE 27

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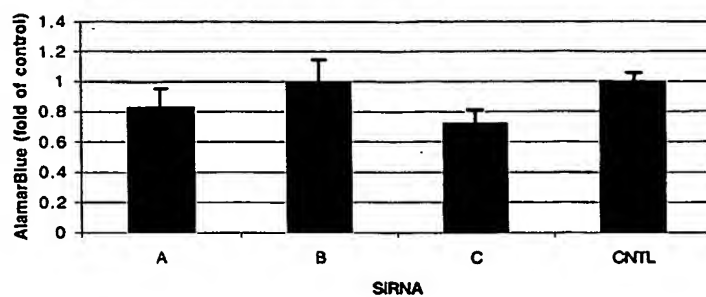


FIGURE 28A

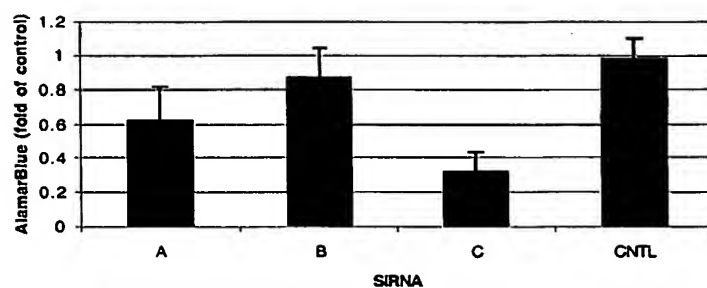


FIGURE 28B

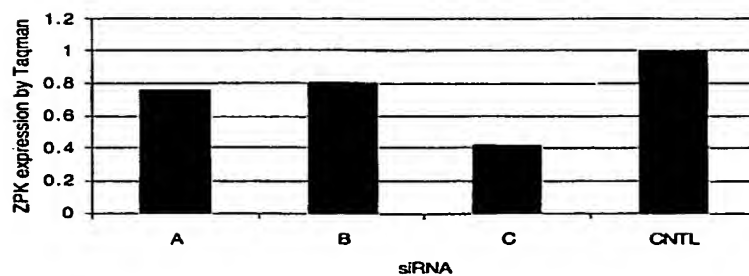


FIGURE 28C

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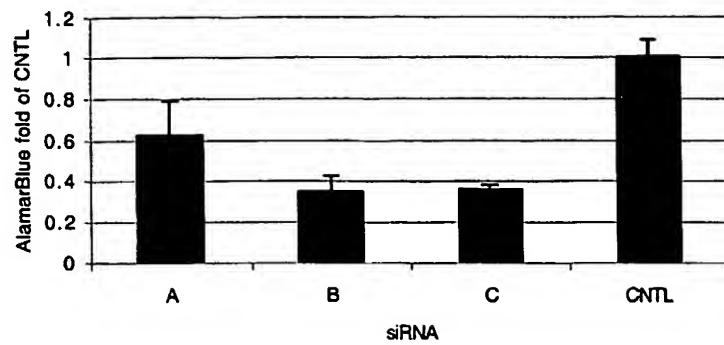


FIGURE 29A

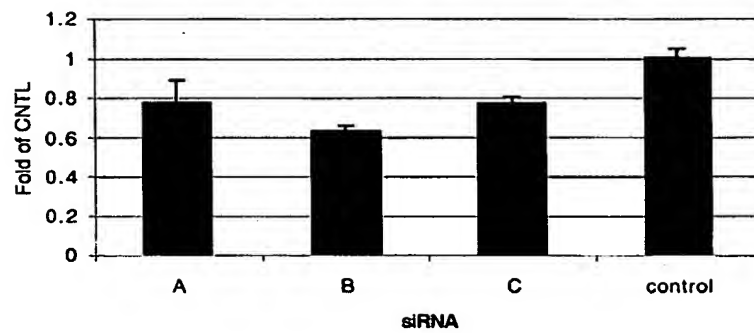


FIGURE 29B

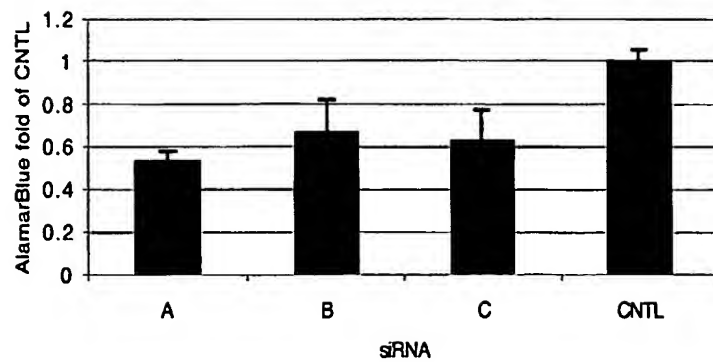


FIGURE 29C

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HCT116

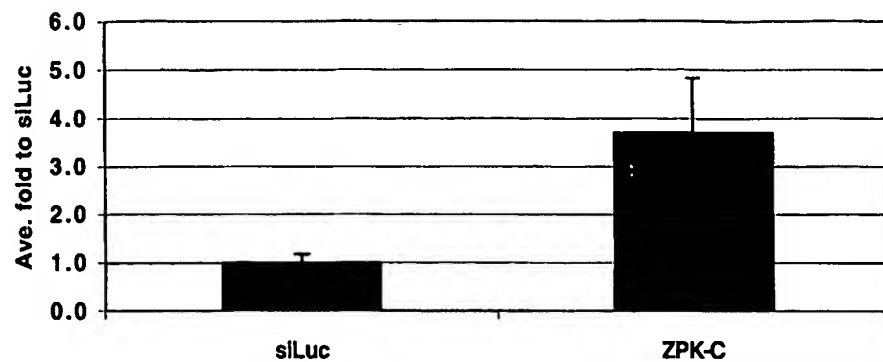


FIGURE 30A

PC3M

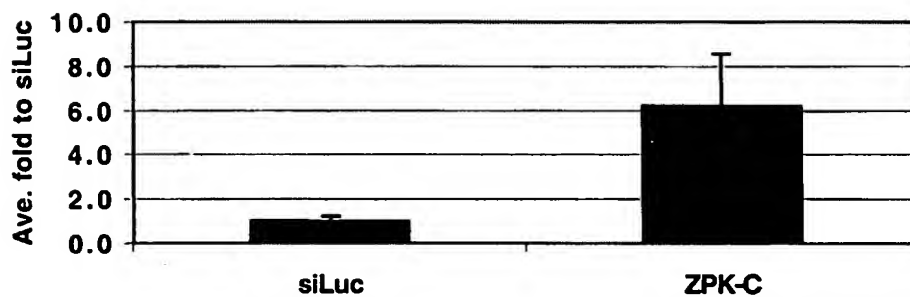


FIGURE 30B

MDAMB231

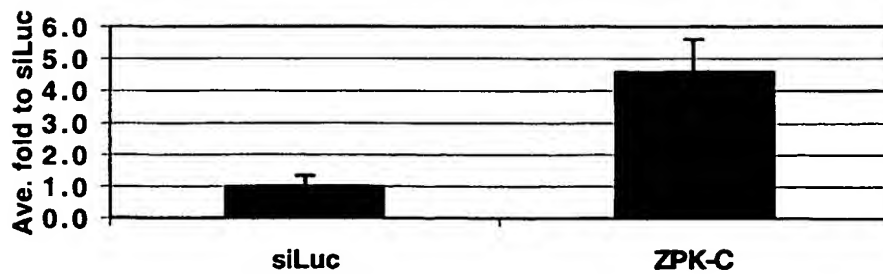


FIGURE 30C

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ZPK Variant 1 DNA Sequence (SEQ ID NO:13)

cttttgtgct	gcgcccgcg	agccccgag	ggcccagtg	tcaccatcat	accaggggccc	60
agaggcgatg	gcttgccctc	atgagaccgc	aacaccctct	ccttcctttg	ggggctttgt	120
gtctacccta	agtgaggcat	ccatgcgcaa	gctggaccca	gacacttctg	actgcactcc	180
cgagaaggac	ctgacgccta	cccagtggtg	acttcgagat	gtggtacccc	ttggtgggca	240
gggtggggga	gggccacgcc	cctccccagg	tggagagccg	ccccctgagc	cctttgccaa	300
cagtgctctg	cagctacatg	agcaggatgc	agggggccca	gggggagcag	ctgggtcacc	360
tgagagtcgg	gcatccagag	ttcgagctga	cgagggtcga	ctgcagtgcc	agagtggcag	420
tggcttcctt	gagggcctct	ttggctgcct	gcgccctgtc	tggaccatga	ttggcaaagc	480
ctactccact	gagcacaagc	agcagcagga	agaccttttg	gaggtccccct	ttgaggaaat	540
cctggacctg	cagtgggtgg	gctcaggggc	ccagggtgct	gtcttcctgg	ggcgcttcca	600
cggggaggag	gtggctgtga	agaagggtgc	agacctcaaa	gaaaccgaca	tcaagcactt	660
gcgaaagctg	aagcacccca	acatcatcac	tttcaagggg	gtgtgcaccc	aggctccctg	720
ctactgcata	ctcatggagt	tctgcgcccc	gggccagctg	tatgaggtag	tgcggtcctg	780
ccgcctgtc	acccccctct	tactggttga	ctggtccatg	ggcatcgctg	gtggcatgaa	840
ctacctgcac	ctgcacaaga	ttatccacag	ggatctcaag	tcaccaaca	tgctaatac	900
ctacgacgat	gtggtgaaga	tctcagattt	tggcacttcc	aaggagctga	gtgacaagag	960
caccaagatg	tcctttgcag	ggacagtagc	ctggatggcc	cctgagggtga	tccgcaatga	1020
acctgtgtct	gagaagggtc	acatctgggt	ccttggcgtg	gtgctatggg	aactgctgac	1080
tggtagatc	ccctacaaag	acgtagattc	ctcagccatt	atctgggggtg	tgggaagcaa	1140
cagtctccat	ctgcccgtgc	cctccagttg	cccagatggg	ttcaagatcc	tgcttcgcca	1200
gtgctggaat	agcaaaccac	gaaatcgctc	atcattccga	cagatcctgc	tgcatctgga	1260
cattgcctca	gctgatgtac	tctccacacc	ccaggagact	tactttaagt	cccaggcaga	1320
gtggcgggaa	gaagtaaaac	tgcactttga	aaagattaag	tcagaaggga	cctgtctgca	1380
ccgcctagaa	gaggaactgg	tgatgaggag	gagggaggag	ctcagacacg	ccctggacat	1440
cagggagcac	tatgaaagga	agctggagag	agccaacaac	ctgtatatgg	aacttaatgc	1500
cctcatgttg	cagctggaac	tcaaggagag	ggagctgctc	aggcgagagc	aagctttaga	1560
gcggagggtg	ccaggcctgc	tgaagccaca	cccttcccgg	ggcctcctgc	atggaaacac	1620
aatggagaag	cttatcaaga	agaggaatgt	gccacagaag	ctgtcaccac	atagcaaaag	1680
gccagatata	ctcaagacgg	agtctttgct	ccctaaacta	gatgcagccc	tgagtggggg	1740
ggggcttcct	gggtgtccta	agggccccc	ctcaccagga	cggagtcgcc	gtggcaagac	1800
ccgtcaccgc	aaggccagcg	ccaaggggag	ctgtggggac	ctgcctgggc	ttcgtacagc	1860
tgtgccaccc	catgaacctg	gaggaccagg	aagcccaggg	ggcctaggag	ggggaccctc	1920
agcctgggag	gcctgcccct	ccgccctccg	tgggcttcat	catgacctcc	tgctccgcaa	1980
aatgtcttca	tcgtccccag	acctgctgtc	agcagcacta	gggtcccggg	gccggggggc	2040
cacaggcgga	gctgggggat	ctggctcacc	acctccggcc	cggggtgaca	ccccaccaag	2100
tgagggctca	gcccctggct	ccaccagccc	agattcacct	gggggagcca	aaggggaacc	2160
acctcctcca	gtagggcctg	gtgaagggtg	ggggcttctg	ggaactggaa	gggaaggggc	2220
ctcaggccgg	ggaggaagcc	gggctgggtc	ccagcacttg	accccagctg	cactgctgta	2280
cagggtgcc	gtcaccgcga	gtcagaaacg	tggcatctca	tcggaagagg	aggaaggaga	2340
ggtagacagt	gaagtagagc	tgacatcaag	ccagaggtgg	cctcagagcc	tgaacatgcg	2400
ccagtcacta	tctaccttca	gctcagagaa	tccatcagat	ggggaggaag	gcacagctag	2460
tgaaccttcc	cccagtggca	cacctgaagt	tggcagcacc	aacactgatg	agcggccaga	2520
tgagcgggtc	gatgacatgt	gctcccaggg	ctcagaaatc	ccactggacc	cacctccttc	2580
agaggtcata	cctggccctg	aaccagctc	cctgcccatt	ccacaccagg	aacttctcag	2640
agagcggggc	cctcccaatt	ctgaggactc	agactgtgac	agcactgaat	tggacaactc	2700
caacagcggt	gatgccttgc	ggccccagc	ttccctccct	ccatgaaagc	cactcgtatt	2760
ccttgtacat	agagaaatat	ttatataaat	tatatatata	tacatat		2807

FIGURE 31

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ZPK Variant 1 Amino Acid Sequence (SEQ ID NO:14)

MACLHET RTP	SPSFGGFVST	LSEASMRKLD	PDTSDCTPEK	DLTPTQCVLR	DVVPLGGQGG	60
GGPSPSPGGE	PPPEPFANSV	LQLHEQDAGG	PGGAAGSPES	RASRVRADEV	RLQCQSGSGF	120
LEGLFGCLRP	VWTMIGKAYS	TEHKQQQEDL	WEVPFEEILD	LQWVGSGAQQ	AVFLGRFHGE	180
EVAVKKVRDL	KETDIKHLRK	LKHPNIITFK	GVCTQAPCYC	ILMEFCAQQQ	LYEVLRAGRP	240
VTPSLLVDWS	MGIAGGMNYL	HLHKIIHRDL	KSPNMLITYD	DVVKISDFGT	SKELSDKSTK	300
MSFAGTVAWM	APEVIRNEPV	SEKVDIWSFG	VVLWELLTGE	IPYKDVDSSA		350

FIGURE 32

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